Jan. 22, 1924. 1,481,727

O. A. MOORE

ENGINE

Filed Jan. 27, 1920 2 Sheets-Sheet 1

Fig. 1.

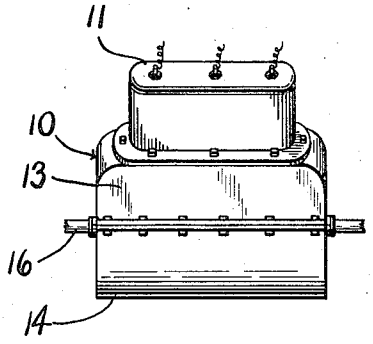


Fig. 2.

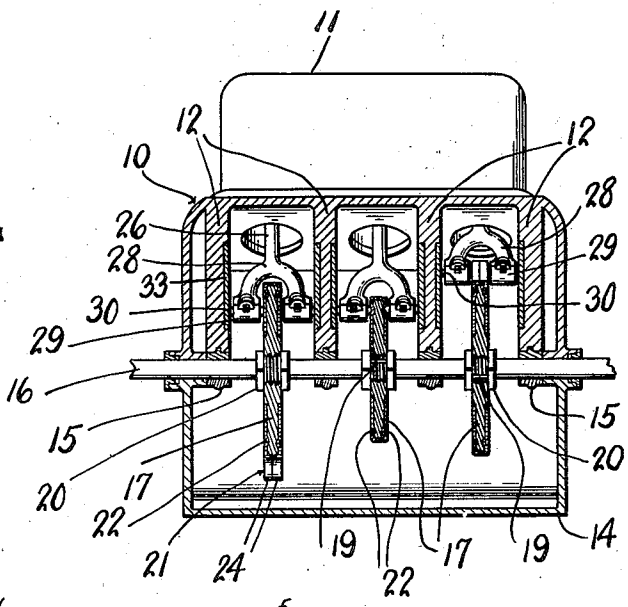
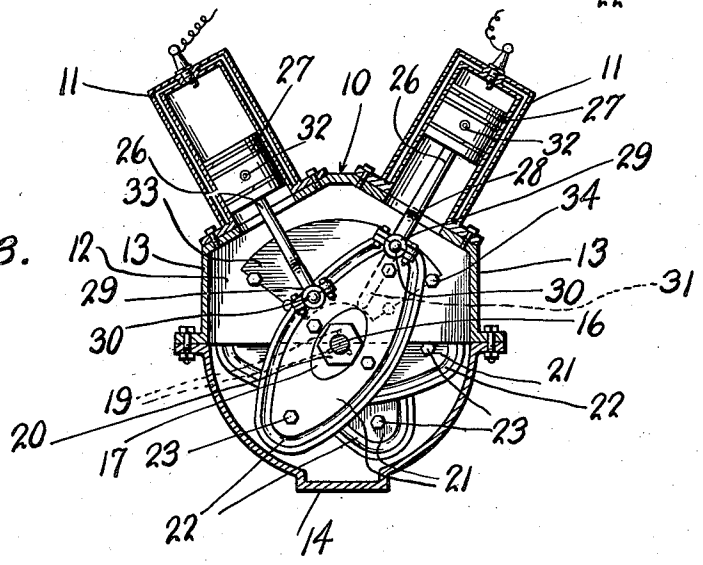


Fig. 3.



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Filed Jan. 27, 1920 2 Sheets-Sheet 2

Fig. 4.

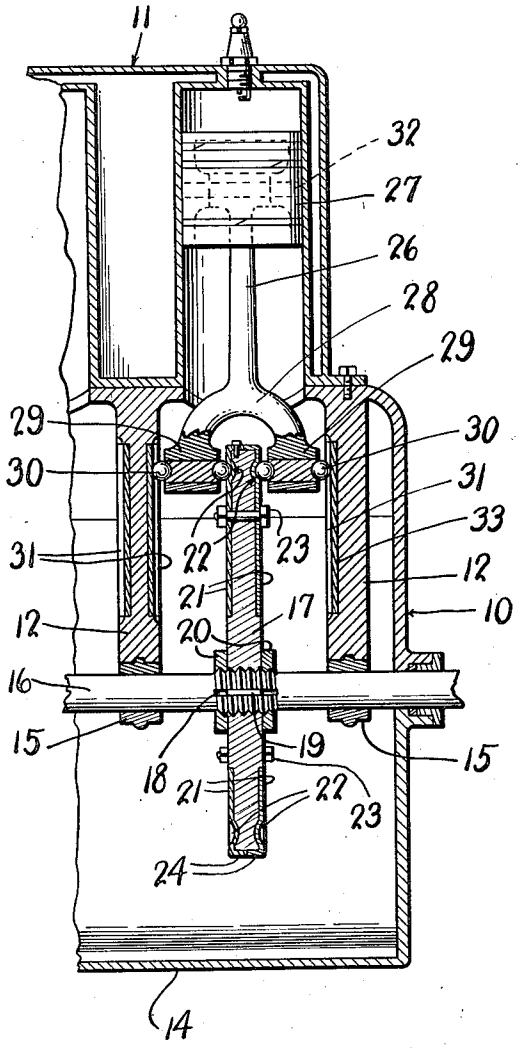
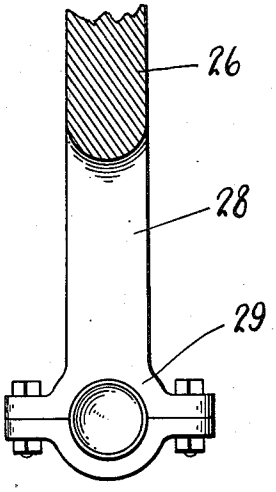


Fig. 5.



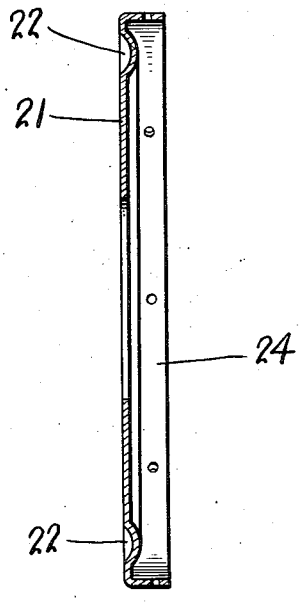


Fig. 6.

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UNITED STATES PATENT OFFICE.

OLAND A. MOORE, OF BETHEL, MISSOURI.

ENGINE.

Application filed January 27, 1920. Serial No. 354,420.

To all whom it may concern:

Be it known that I, OLAND A. MOORE, a citizen of the United States, residing at Bethel, in the county of Shelby and State of Missouri, have invented new and useful Improvements in Engines, of which the following is a specification.

This invention relates to improvements in engines and particularly to means for transferring power from the engine piston to the drive shaft and is especially designed for use in connection with internal combustion engines.

An object of the present invention is to dispense with the usual crank shaft and to substitute therefor a connection in the nature of an elliptical plate secured to a straight drive shaft.

A further object is the provision of means for connecting more than one piston at the same point to the drive shaft, to provide for economy of space and to further increase the power of the shaft.

Other objects and advantages of the invention will appear as the following description is read in connection with the accompanying drawings.

In the drawings:

Figure 1 is a side elevation of an engine, embodying the present invention.

Figure 2 is a longitudinal sectional view taken on a line with the drive shaft.

Figure 3 is a transverse sectional view.

Figure 4 is an enlarged detail section taken on a line with the sliding bearing for the piston rod.

Figure 5 is an enlarged section through one of the forked ends of the piston rod, the figure being taken at right angles to Figure 4.

Figure 6 is a detail view of the segmental wear plate for the sliding bearing.

Referring in detail to the drawings, wherein like characters of reference denote corresponding parts, the reference character 10 indicates the engine base, upon which are mounted cylinders 11. These cylinders are arranged in pairs side by side, and may be formed in a double block with three cylinders in each block, providing a six cylinder engine. Of course it is understood that the number of cylinders may vary as desired.

The base comprises a plurality of transversely disposed bars 12, which are spaced apart and have their ends connected by side plates 13. Depending from the bottom of the base and connected to the side plates and the end bars 12 is a plan 14, within which may be placed suitable lubricating oil for the purpose of lubricating the various working parts of the engine as will be understood.

Mounted in bearings 15 secured to the bars 12 is a shaft 16 and secured upon this shaft between each of the bars 12 is a wheel or disk 17.

Various means may be employed for securing the wheel or disk to the shaft, one of said means being provided by threading the shaft and the bore of the wheel or disk 17 and screwing the latter in position, the said threads being of a greater diameter than the diameter of the shaft and extending only a sufficient distance to permit of the proper adjustment of the wheel or disk. The shaft is grooved transversely of the threads as indicated at 18 and keys 19 are inserted in these grooves and in grooves provided in the wheel or disk, so that rotation of the latter with respect to the shaft is prevented. Collars or nuts 20 are then screwed into position upon the opposite sides of the wheel or disk against the end of the keys 19 to prevent the accidental removal of the keys.

The wheels or disks 17 are of elliptical shape and are arranged upon the shaft at approximately a hundred and twenty degrees with respect to one another. Secured upon their opposite side edges and extending around their periphery are plates 21. These plates are provided with grooves 22 which are disposed adjacent the periphery of the disks and are bolted thereto by means of bolts 23, which pass through the plates and disks. In addition, the plates are provided with flanges 24 which extend over the periphery of the disk and to which they are secured.

The disks 17 are designed to take the place of the usual cranks of the drive shaft of the engine and for this purpose they have a working connection with a piston rod 26, which is in turn connected to the piston 27 of each of the cylinders 11, as is usual in engines of this type. For this purpose, each of the rods 26 are forked at one end as indicated at 28 and each end of the fork is provided with a double bearing 29. These bearings are designed to receive balls 30, which project beyond the ends of the bearings, the opposed balls of each fork engaging and traveling in the grooves 22 of the

disks. The opposite or outwardly extending balls are designed to travel in a groove 31, which forms a sliding bearing for the end of the piston rod, the latter being designed to reciprocate in this groove or sliding bearing, due to the movement of the pistons. This reciprocation causes a rotation of the disks 17 due to the engagement of the forked end of the connecting rod with the grooves 22. Any suitable connection between the piston rod and the piston may be provided, such as is indicated at 32.

By providing the plate 21, the bearing between the connecting rod and the disks may be renewed when necessary, and in order to provide for the renewal of the sliding bearings 31, each of the bars 12 are provided upon opposite sides with counter sunk plates 33, flush with the surface of the bars. These plates are of segmental formation and are shaped to conform to the groove 31, being bolted in position by means of the bolts 34.

The upper edges of the bars 12 are beveled as shown and the cylinders are arranged at an inclination with respect to the vertical and a sliding bearing 31 is provided adjacent each end of said bars. By this means two connecting rods may be engaged with each of the disks 17, so that each disk will be acted upon by a pair of pistons.

The invention is susceptible of various changes in its form, proportions and minor details of construction, and the right is herein reserved to make such changes as properly fall within the scope of the appended claim.

Having described the invention what is claimed is:—

The combination with an engine including pistons, piston connecting rods and a drive shaft, of a plurality of spaced transversely disposed bars, bearings secured to said bars and being adapted to receive the drive shaft, a counter sunk plate secured upon each side of the bars and being provided with a groove, an elliptical shaped disk disposed between each pair of bars and being detachably secured to the drive shaft, plates secured to the opposed side edges of the disks and being designed to extend around the periphery thereof, and there being a groove disposed adjacent the periphery thereof, a forked end for each connecting rod, and anti-frictional elements carried on each side of each fork, the inner anti-friction elements engaging the grooves of the plates on the disks and the outer anti-friction elements engaging the groove of the countersunk plates, as and for the purpose specified.

In testimony whereof I affix my signature.

OLAND A. MOORE.